Group 9

Process Book

Plant Mom

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Our Product:

Plant Mom

Problem

Automation of taking care of plants using AI-IoT

Existing Alternative

Manual and physical labor that can be helped with a controller

Solution

This application...

- Uses AI-IoT tactics to scan plants
- Checks the state of the plant
- Connects to existing surrounding mechanisms, like humidity control and sprinkler control to optimize health of the plants
- Gives suggestions on what products to buy (like fertilizer)
- Gives collected data feedback on the plants that are connected to the application

01

Matchmaking concepts

Matchmaking - Evelyn

Matchmaking for IoT-AI Application				Example of Ranking									
Specific Capability	**Domain and/or Activity**	**Customer**	**Application/Description**	**Financial viability (1 = high cost, 5 = low cost)**		**Technical feasibility (1 = low feasibility, 5 = high feasibility)**		**Desire/Acceptance (1 = low desire, 5 = high desire)**		**Risk (1 = high risk, 5 = low risk)**	**Rank (out of 20)**
Personal automated inventory tracking and management	Home Appliances	Homeowners, some companies	Reports state of food inside the fridge and monitors regular purchases to make suggestions	3	Constant monitoring and recognition of spoiled food based on looks/date	3	Difficult to tell if food is spoiled or not just by the way it looks or the date (since it could have been left out)	5	Parents especially would love to know what state their food is in and what they should buy at the store	4	Could say that food is spoiled when it is not and vice versa, leading to sickness	15
Automated inventory tracking and management	Retail	Retailers, e-commerce business, consumers who want to see their package locations	Tracking automated transportation system to show where certain deliveries are	4	There are already some similar features out in delivery companies with some manual parts integrated (goal is to get rid of manual)	3	Sometimes difficult to tell when products are delivered, so it might be hard to automate that	5	Saves time for manufatureres and deliverers to have less hours or gain more for less	3	Could say that a package is delivered when it is not	15
Increasing personal health	Fitness and health	Any person that wants to make their life more financially and physically efficient	Monitors a way to create more efficiency in some kind of activity (schedule, energy, food, money, etc.)	3	Cost comes from constant tracking of personal diet, demographics, and such which could mean high complexity automation or high manual input from user	1	High complexity automation or high manual input from user (like period trackers but with more input)	4	Especially people who want to become healthier efficiently or elderly	2	Could misjudge someone's diet and make them malnutritioned or overweight	10
Real-time traffic monitoring and increasing productivity	Retail	shoppers, retailers, mall-related jobs (like janitors)	Monitor traffic inside of a mall to suggest ideal times around a schedule to visit	5	Already existing easy tech to track units (like one person or one dog) so that can be implemented	5	Can easily sense movement and to check how many people are in a room or a location and calculate traffic like in google maps	3	Retailers might not like quick movement of customers, since they might buy less (stay in a place longer = buy more)	3	Higher prices to make up for lower buys from quicker customer movement	16
Real-time traffic monitoring and increasing productivity	Vehicle traffic	drivers, surrounding stores and homes	Monitor flow of traffic to predict/maintain density	5	Already existing easy tech to track units (like one person or one dog) so that can be implemented	5	Can easily sense movement and to check how many people are in a room or a location and calculate traffic like in google maps	5	People always want to get to places faster	3	Could make it have more traffic by accident	18
Automated inventory tracking and management	Retail	retailers, markets, commercial businesses	Tracks condition of products to see when to throw out old and get new	3	Constant monitoring and recognition of spoiled food based on looks/date	3	Difficult to tell if food is spoiled or not just by the way it looks or the date (since it could have been left out)	4	Companies can just scan with the machine to see whether it is spoiled or not (still takes up a bit of time though in this scenario)	3	Might throw out unspoiled food or not throw out spoiled food	13
Automated inventory tracking and management	Reatil	shoppers, retailers, commercial businesses, factory workers, machine builders	Tracking size, weight, count of packages that passed by on a factory line	5	Easy to scan objects	4	The angle of the package might obscure size	4	Makes it easier to calculate how many items to put into trucks or consider traffic of packages	3	Might accidentally overpack a truck or underpack	16
Automated personal inventory trackig and management	Home and office organization	workers, home owners, renters, students	Organizing and locating certain objects to make it easier to find	4	Can install scanners for a room or a mobile/handheld device	4	Some objects can be obscured or hard to identify	3	People might not really care for scanning objects, since they might already know where those things are	2	Maybe some security privacy	13
Automated pet health tracking	Fitness and health	pet owners, pet sellers, rescue locations	Tracks diet of a person/pet to indicate when to eat what as suggestions	4	Easy app to develop/install	2	Difficult to tell what state the person/pet is in unless there is some alternate/smart input	3	People might want to see suggestions on how to alter their diet, but might not completely depend on it	2	Some privacy risks	11
Increasing personal health	Fitness and health	people with skin conditions or trouble, models, model agencies	Tracks what is good for your skin through scanning what foods/environments makes more acne appear (skincare)	3	Might be difficult to make cheaply for a good quality AI	5	Already existing scanning features to detect blemishes and skin conditions	4	Beauty influencers and people who want to find help for skincare/skin health will want this product	2	Could make skin rash or have some kind of negative outcome	14

Matchmaking - Ebi

Matchmaking for IoT-AI Application				Example of Ranking								
Specific Capability	**Domain and/or Activity**	**Customer**	**Application/Description**	**Financial viability (1 = high cost, 5 = low cost)**		**Technical feasibility (1 = low feasibility, 5 = high feasibility)**		**Desire/Acceptance (1 = low desire, 5 = high desire)**		**Risk (1 = high risk, 5 = low risk)**	**Rank (out of 20)**
Predictive Maintenance	Predictive Maintenance	Factory Owners	Monitor machinery to predict when maintenance is required	4	Potential to save expensive machinery downtime	4	Existing sensors can be used just need AI implementation	5	Downtime is costly in factories; high demand for such solutions		13
Smart Fridge Inventory	Home Appliances	Homeowners	Tracks inventory suggests recipes & auto-orders groceries	3	Niche market but growing interest	4	IoT sensors and AI for inventory are feasible	4	Growing interest in smart homes		11
Intelligent Traffic Management	City Planning	City Govt	Optimizes traffic light timings & suggests re-routing to drivers	5	Can reduce traffic congestion costs	4	IoT sensors exist requires good AI algorithms	4	Citizens & city govts desire reduced traffic congestion		13
Precision Agriculture	Farming	Farmers	Monitors soil weather & crops for optimal harvest	5	Increasing food demand & tech-driven agriculture	4	Satellite drone tech and IoT are mature	4	Sustainability & higher yields are in demand		13
Elderly Monitoring & Assistance	Health	Caregivers	Monitors elderly activities & alerts for any anomalies	4	Aging population in many countries	4	Wearable IoT & AI analytics is feasible	5	High demand due to aging population		13
Smart Waste Management	Urban Management	City Govt	Monitors & optimizes waste collection routes	4	Efficient waste collection can save costs	3	Requires widespread IoT implementation	4	Cleaner cities & efficient waste management are in demand		11
Adaptive Home Energy Management	Energy	Homeowners	Monitors & optimizes home energy consumption	4	Energy costs savings over time	4	IoT home devices & AI analytics are feasible	4	Growing awareness about energy conservation		12
Real-time Water Quality Monitoring	Water Management	Local Govt	Monitors and reports on water quality in real-time	4	Clean water is a priority	4	IoT sensors for water quality are available	5	Public health and clean water are high priorities		13
AI-driven Customer Support	Retail	Retailers	Provides immediate 24/7 customer support	4	Reduces manpower costs & increases customer satisfaction	4	Chatbots & AI-driven CRM systems are feasible	4	Customers desire instant support		12
Connected Workout Equipment	Fitness	Gym-goers	Personalizes workouts & tracks progress seamlessly	3	Growing health & fitness consciousness	4	IoT gym equipment & AI-driven apps are feasible	4	Growing demand for personalized fitness solutions		11

Matchmaking - Varsha

Matchmaking for IoT-AI Application						Example of Ranking								
Name	#	Specific Capability	Domain and/or Activity	Customer	Application/Description	Financial viability (1 = high cost, 5 = low cost)		Technical feasibility (1 = low feasibility, 5 = high feasibility)		Desire/Acceptance (1 = low desire, 5 = high desire)		Risk (1 = high risk, 5 = low risk)		Rank (out of 20)
Varsha	12	Automated inventory tracking and management.	Retail	Retailers and e-commerce businesses.	Reducing stockouts and overstocking, improving supply chain efficiency.	4	Reduced inventory costs and improved sales.	4	RFID, IoT sensors, and AI for inventory tracking.	4	High, for inventory cost optimization.	4	Data accuracy	12
Varsha	13	Real-time home security monitoring and threat detection.	Home security.	Homeowners and security service providers.	Preventing break-ins and unauthorized access	5	Enhanced security and peace of mind for homeowners.	4	IoT cameras, sensors, and AI algorithms	4	High, for personal security	3	Privacy concerns and false alarms	13
Varsha	14	AI-Enhanced Fleet Management	Transportation and logistics	Logistic companies and transportation firms	Improving route efficiency, reducing fuel costs, and minimizing maintenance downtime	5	Cost savings and improved delivery times	4	IoT devices in vehicles and AI algorithms	5	High, to streamline operations	2	Data security and initial setup costs	14
Varsha	15	AI-Enhanced Air Quality Monitoring in Cities	Urban environmental monitoring	Municipalities, environmental agencies, and public health organizations	Providing air quality data for public health alerts and urban planning	3	Improved public health, reduced healthcare costs, and better urban planning	3	IoT air quality sensors and AI analytics.	5	High, for healthier urban environments	4	Data privacy and data accuracy	11
Varsha	16	AI-Driven Asset Tracking and Management	Asset management and tracking.	Logistics companies, manufacturing, and asset-intensive industries.	Tracking inventory, equipment, and vehicles to improve efficiency and reduce losses.	3	Reduced losses and enhanced asset utilization	5	IoT tracking devices and AI asset management software	4	High, for improved asset visibility and control	4	Data security and integration challenges	12
Varsha	17	AI-Enhanced Predictive Maintenance for Aircraft	Airline maintenance and aviation.	Airlines and aircraft maintenance providers	Predicting when aircraft components will fail, reducing unplanned maintenance and increasing safety	5	Reduced maintenance costs, increased safety, and minimized downtime	4	IoT sensors on aircraft components and AI analytics	4	High, for aviation safety and efficiency	3	Data accuracy and safety concerns	13
Varsha	18	AI-Enhanced Baggage Handling for air travellers	Airport and airline operations	Airlines, airports, and passengers	Reducing lost luggage, optimizing baggage routing, and improving passenger experience	5	Reduced baggage mishandling costs and enhanced passenger satisfaction	5	IoT baggage tags and AI baggage tracking systems	5	High, to minimize travel hassles	4	Privacy concerns and system accuracy.	15
Varsha	19	Musuem Exhibit Space Optimization	Museum operations and space management	Museums and exhibition planners	Analyzing visitor traffic patterns, exhibit popularity, and space utilization to optimize the layout and allocation of exhibit space.	4	Improved space utilization, increased visitor flow, and potentially higher revenue	5	IoT sensors to track visitor movements and AI for space optimization algorithms	5	High, for a more organized and enjoyable visit.	4	Data privacy and maintaining the cultural and aesthetic value of exhibits	14
Varsha	20	Smart Hotel Rooms - for automated climate control, lighting, and room service requests	Hospitality and hotel management	Hotels and travelers	Guests can control room settings through smartphone apps, and sensors monitor room occupancy for energy efficiency.	2	Reduced energy costs, improved guest satisfaction, and operational efficiency	4	IoT sensors for occupancy, climate control, and lighting, and AI-driven room management systems	3	High, for personalized and energy-efficient stays	3	Privacy concerns and technology integration	9

Matchmaking - Ashima

Matchmaking for IoT-AI Application

Example of Ranking

Specific Capability	Domain and/or Activity	Customer	Application/Description		Financial viability (1 = high cost, 5 = low cost)		Technical feasibility (1 = low feasibility, 5 = high feasibility)		Desire/Acceptance (1 = low desire, 5 = high desire)		Risk (1 = high risk, 5 = low risk)	Rank (out of 20)
AI Powered inventory Management	Inventory and Merchandise Planning	Retail businesses, warehouses, e-commerce platforms, grocery stores, manufacturing companies, and any other entities managing inventory and stock.	Tracks inventory and predicts future stock needs	4	Existing tech. Setup cost may be substantial but ROI is high due to efficiency gains.	5	Existing inventory systems and AI capabilities can integrate seamlessly.	5	Businesses constantly look for ways to streamline inventory processes.	4	Primarily relies on accurate data; slight inaccuracies can be addressed.	
AI Surveillance security system	Security System	Commercial and residential property owners, corporate offices, public spaces, government offices	Identifies potential security threats and alerts authorities	3	Initial setup costs are high, but maintenance is low. ROI depends on security needs	5	Surveillance tech and AI recognition algorithms are well-established.	4	Increasing security concerns drive demand for advanced systems.	3	Dependence on the accuracy of threat detection; false positives can occur.	
Smart home energy saver	Home Management	Homeowners, property management companies, and residential builders.	Monitors and optimizes home energy usage for cost savings	4	Long-term energy savings offset the initial investment.	4	IoT for homes is mature, but AI-driven energy optimization is still advancing.	4	Growing interest in sustainability and saving on energy bills.	4	Over-reliance might lead to system failures causing discomfort, but overall risk is moderate.	
Smart elderly care system	Healthcare	Elderly individuals and their families, assisted living facilities, senior care centers	Monitors health parameters and notifies caregivers in emergencies	4	Elder care is expensive; families might see this as a cost-effective solution.	4	Health monitoring devices exist, but integration with AI-driven alerts is still growing.	5	Aging populations in many countries drive the demand.	2	Health-related systems have higher risk due to potential consequences of failures.	
Smart mirrors for virtual try-ons	Retail	Clothing and fashion retail stores, shopping malls	Suggestions for accessories or sizes, and calling assistance without leaving the room	3	Initial investment in technology might be high, but can enhance sales and customer experience.	4	Augmented reality technology is maturing, but integration in retail environments requires adaptation.	4	The retail industry seeks innovative customer experiences.	3	Dependency on the technology working flawlessly during each customer interaction.	
AI Assisted remote learning	Education	Educational institutions	Provides personalized learning resources and tracks student engagement	4	Potentially cheaper than traditional education methods in the long run.	5	E-learning platforms are already widespread, and integrating AI is the next step.	5	Pandemic-induced remote learning has boosted acceptance.	4	Reliant on technology platforms and internet stability.	
Smart Wildlife Monitoring	Environmental Conservation	Environmental conservation agencies	Wildlife tracking and behavior analysis	3	Initial tech setup in wilderness areas can be expensive.	4	Drones and sensors are available; AI-driven analytics for wildlife behavior is evolving.	3	Limited to conservationists, researchers, and governmental bodies.	3	Environmental conditions can impact technology; ensuring non-intrusiveness to wildlife is crucial.	
AI-Enhanced Customer Service Chatbots	Customer Service	any customer service, especially e-commerce platforms, banks, tech companies, airlines, hospitality businesses	Automated customer assistance	5	Chatbots can drastically reduce manpower costs in customer service.	5	Chatbot technology is mature and widely accepted.	4	Businesses are always looking for efficient customer service solutions.	4	Risks involve miscommunication or inability to solve complex queries.	
Smart building climate control	Climate Management	Commercial building owners	automated climate control	4	Energy savings over time can justify the initial setup costs.	4	Climate control tech is mature; integrating with AI for optimization is the advancement.	4	With green building trends, the desire for such systems is high.	4	Over-reliance can lead to discomfort in case of failures.	
Predictive Fleet Management	Transportation	Logistics and transportation companies	Vehicle health and route optimization	4	Savings from optimized routes and maintenance can justify the tech costs.	4	Vehicle telematics are common; AI integration for predictions is the evolving part.	4	Logistic companies are always looking to reduce costs and increase efficiency.	3	Mis-predictions can lead to inefficiencies or vehicle breakdowns.	

Matchmaking - Ikram

C	D	E	F	G	H	I	J	K	L	M	N	O	P
Matchmaking for IoT-AI Application					Example of Ranking								
Specific Capability	**Domain and/or Activity**	**Customer**	**Application/Description**		**Financial viability (1 = high cost, 5 = low cost)**		**Technical feasibility (1 = low feasibility, 5 = high feasibility)**		**Desire/Acceptance (1 = low desire, 5 = high desire)**		**Risk (1 = high risk, 5 = low risk)**		**Rank (out of 20)**
Carbon footprint awareness during purchase	Environment	Shopping Consumers	Letting people know the carbon footprint of every item that they add to cart during shopping to nudge the impact		2	Means of letting people know the carbon footprint would impact the cost	4	It's comparatively easier to get carbon footprint of any item that's there in the grocery store	1	For climate conscious people, acceptance might be higher and for others it's not	4	No much risk in showing the carbon footprint	11
Effective Disposal on Trashcan	Environment	Trashcan users	Before throwing into the trashcan, helps identify the category it needs to go in (Recyclable, Landfill,..)		3	Moderate cost to install a camera that detects and a light that indicates where to dispose	2	Categorizations may not be accurate	2	Users need not be confused in front of trashcan on where to throw what	5	No much risk, worst case item going into wrong bucket	12
Usage and Pattern from Rehab center	Healthcare	Patients in Rehab	Building custom tools for understanding the effectiveness of tools usage in Rehab center. Like how effective is weight lifting working for a patient		3	Potential cost savings in rehab management.	4	Feasible with custom tools and data analysis.	3	Valuable for rehab center efficiency.	2	Low risk; data analysis can help improve rehab effectiveness.	12
Customer's in-store journey	Commerce and Shopping	Clothing Store	To understand the customers preferences, monitor their journey across store and reactions, to help design better clothes and experience		4	Can lead to better sales through personalized experiences.	4	Feasible with in-store tracking technology.	4	Valuable for both customers and retailers.	3	Some concerns about privacy and data security.	15
Efficient Yard Management	Logistics and Transportation	Warehouse Owning Companies	Prediction for yard slots based on truck's live location and travel time to ensure time on the yard is not being wasted		4	Can save time and resources in logistics.	3	Need to understand the effectiveness of tracking and prediction technology.	4	Valuable for warehouse owning companies.	2	Low risk with proper implementation.	13
Predictive maintenance for commercial products	Real estate	Property Management Companies	For the property management companies that own houses let for rentals with common washing and dryer units, a predictive maintenance add-on device that let them track the issue and fix before customer gets impacted		3	Potential cost savings for property management.	3	Highly depends on the accuracy of predictive maintenance technology.	3	Valuable for property management.	4	Higher risk as it involves maintenance predictions.	13
Efficient Traffic Management	Road Transportation	Governments	Crowd based traffic signal change rather than fixed timing would enhance the traffic signal and waiting experience		3	Potential benefits in traffic flow.	4	Feasible with adaptive traffic signals.	4	Improved traffic signals are desirable.	3	Some challenges in implementation and acceptance.	14
Waste Management System	Public Welfare	Governments / Municipalities	Not all trash bins across the city get the same amount of waste that needs to be collected all the time. A prediction or live tracking system that keeps discarding based on need.		4	Can optimize waste collection.	4	Feasible with data tracking and prediction.	3	Valuable for governments and municipalities.	2	Low risk in implementation and management.	13
Efficient Energy Management	Energy	Hospital Managements	In hospitals, HVAC systems are used all across and getting data from that for efficient operation that traditional static operation would save energy and money		4	Promising cost-saving potential for hospitals.	3	Feasibility may require specialized HVAC systems.	4	Saving cost and time for hospitals	4	Medium risk as it doesn't involve patients directly, but patients are stakeholders	15
Cargo Management	Energy and Transportation	Shippers and Transporters	The cargo shipment's data needs to track required temperature for the cargo shipment throughout the entire shipping process while ensuring that its condition remains intact without any discrepancies		4	Essential for protecting cargo and cost reduction.	3	Implementation may require advanced tracking.	4	Protecting value for shippers	3	Low risk as it is only to do with tracking	14

Matchmaking - Siyun

Matchmaking for IoT-AI Application				Example of Ranking								
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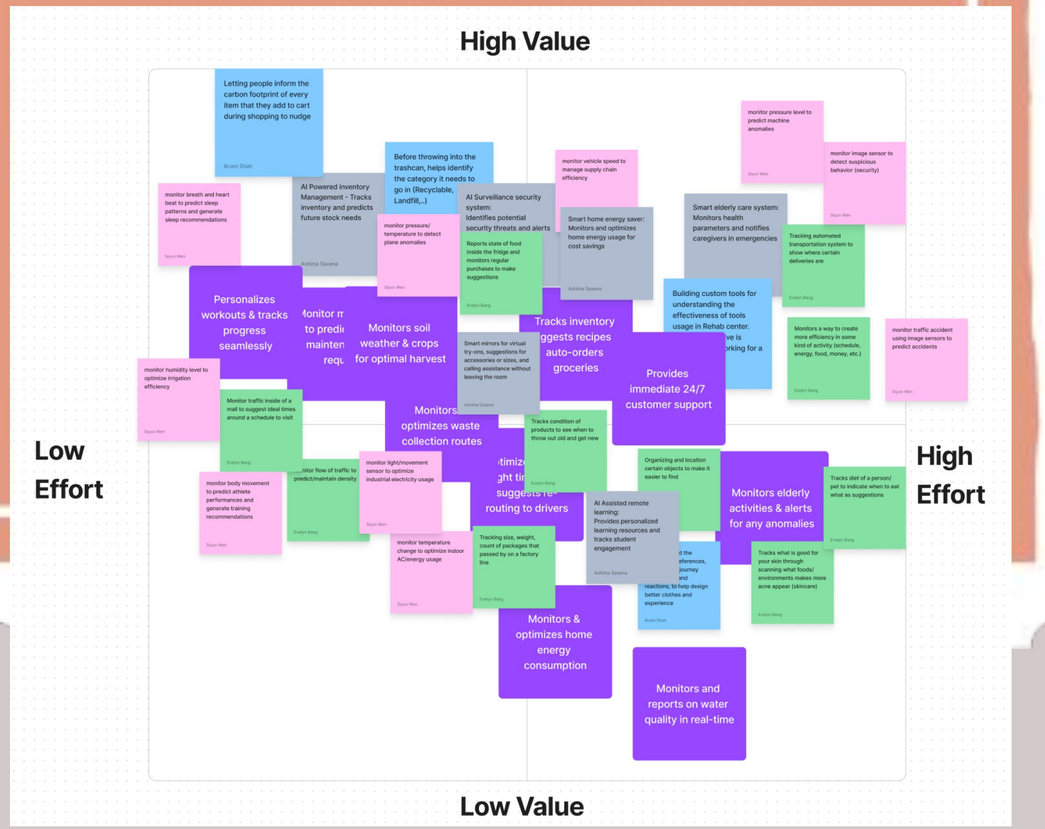
motion sensor that tracks movement	Sports	Athletes	measure athlete performance trends and recommendations on postures and training	3	existing tech but niche market	3	not sure how accurate it would be	4	useful for training	3	false negatives could be endangering	13
inertial sensors that tracks movement and heart beat	Wellness	users with sleep problems	measure sleep quality and give sleep recommendations	4	existing and common tech	5	apple watch already exists	4	sleep problem is common and annoying	3	false negatives could be endangering	16
image sensor, computer vision	Transportation	the police/public sector	predict where the frequent accident happens and enable the policy makers to plan in advance	2	very expensive with computer vision	3	catching accidents requires large amount of data	2	not sure if this adds too much value to the existing traffic data	3	inaccuracy leads to danger	10
pressure sensor, anomaly prediction	Aviation	air companies	predict possible plane malfunction	3	can be expensive but prevalent tech	2	complicated mechanism	5	critical to the function of the business	2	false negatives could be endangering	12
humidity sensor	Agriculture	farming corporations	manage automatic irrigator based on humidity data	4	existing and common tech	5	agriculture system is prevalent	4	saves money and labor	5	no obvious risk associated	18
inertial sensors that tracks movement	Supply Chain	supply chain companies	improve supply chain efficiency based on transporation time data	3	can be expensive but prevalent tech	4	feasible and already exists	4	desireable and useful info for the business. money-saving in the long term	4	inaccuracy leads to profit loss	15
radar	Security	Security companies	predict suspicious behaviors	3	can be expensive but prevalent tech	3	accuracy could be low	3	not sure how much added value there are	3	inaccuracy leads to danger	12
temperature sensor	Home, energy use	residents who are energy-conscious	monitor temperature change to optimize indoor AC/energy usage	4	existing and common tech	5	home energy system is prevalent	3	depending on the size of the house, money may be saved but not very much	5	no obvious risk associated	17
Light sensor and radar	Industry, energy use	industries	monitor light/movement sensor to optimize industrial electricity usage	3	can be expensive but prevalent tech	4	feasible and already exists	4	saves electricity bill	5	no obvious risk associated	16
pressure sensor, anomaly prediction	Manufacture	Manufacturers	predict possible machine malfunction	3	can be expensive but prevalent tech	3	complicated mechanism	5	useful and money-saving	2	false negatives could be endangering	13

Rationale for Concept Selection

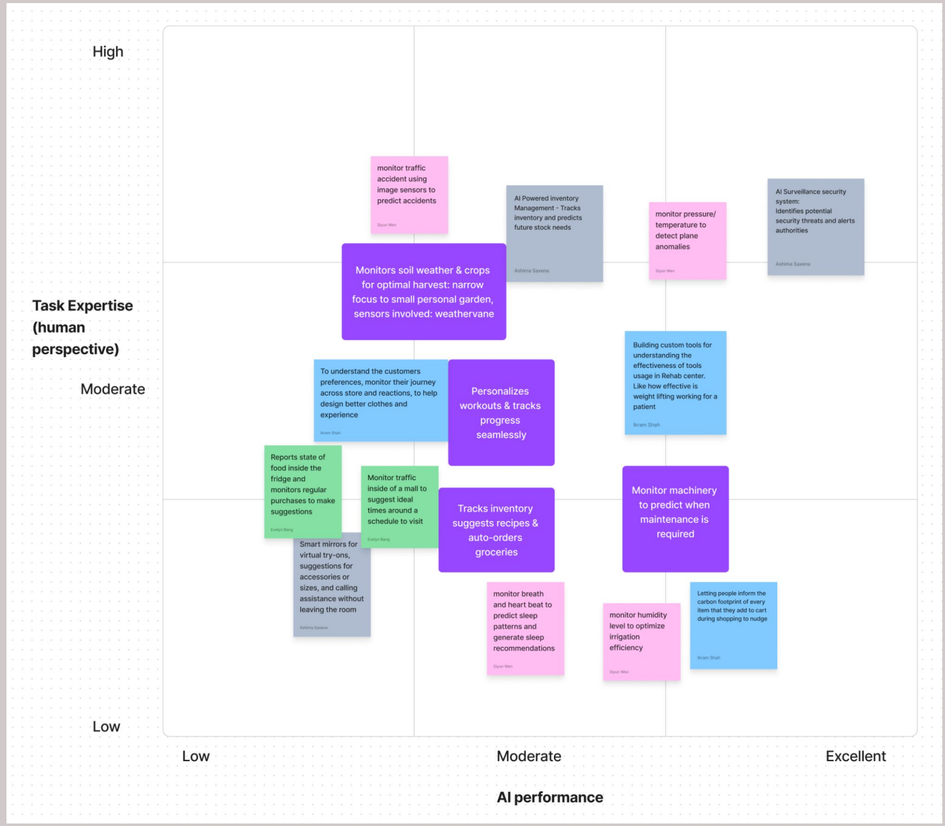
Using Decision Making Matrices

We evaluated each concept against a set of weighted criteria including cost, feasibility, and alignment with customer needs. The decision matrix allowed us to objectively assess each option.



Collective Discussion

In addition to the decision matrix, we had an open discussion as a team to debate the pros and cons of each concept. This qualitative assessment allowed us to share perspectives and insights that may not have been captured in the decision matrix.



Reflection on Concept Selection Crit

Feedback from Class

- Technical solution and feasibility has to be clearly explained. Share clear answers for following:
  - Where was the AI?
  - Which sensors are getting used
  - What data is being collected
  - Are we a robotics system or just providing data
- We received feedback to include risk analysis in the pitch. Clearly outline identified risks and provide a robust mitigation strategy.
- For the slides on Financial, we received feedback for the structure for the pitch. To put summary first and then add due diligence later

Feedback Integration

- In our final pitch, we covered the technical intricacies of our solution, including where is the AI and how will the sensors will be used. We also shared this with the class during the final pitch.
- Recognizing user concerns, we addressed potential risks and outlined effective mitigation strategies.
- Responding to feedback, we revamped the financial section, placing a concise summary at the forefront before delving into detailed content.

Parallel Refinement Process

The Technical Team

- Explored different types of sensors, feasibility according to the needs for a home usage
- Evaluated the power needs that usually adapt to household settings
- Assessed ease of use and installation
- Reviewed options for connectivity and data transmission

The UX Team

- Discuss with the technical team and the financial team to find the suitable customer: medium-size nursery owners.
  - They are specifically chosen because large-scale commercial operations often have the resources to invest in advanced monitoring and automation systems, while small hobbyist gardeners might not need such sophisticated tools
  - Medium-sized nurseries, however, exist in a niche where the need for technological advancement is palpable, but the solutions are often not tailored to their scale and specific needs

The Financial Team

- As per the technical aspects of the model, we added the finance for the instrumentations - sensors, watering system, humidifiers and operations cost - servers, maintenance, R&D and licensing cost.
- During CRIT session, Prof Nik gave feedback on the structure. To make it reverse-ordered , summary first and due diligence later. Hence, we incorporated the structure

Refinement Critique Feedback

Technical Feasibility & Risks

- Got feedback on how to solidify the technical aspects of Plant Mom
  - Considering location, scope, and function of the AI and mechanical aspects
- Thinking about where the data goes after collection
- Thinking about the risk
  - Providing data versus automating care of plants

Financial Feasibility & Risks

- Thinking about the costs of providing only data or machinery as well
  - Compatibility of AI with existing machinery
  - Providing options for machinery
- High risk for business users
  - Lower risk through transparency

02

Pitch Deck

How We Build an Effective Pitch

Technical Team

- Think about the outline of the project
- What kind of mechanisms will be used in this AI?
  - Also thinking about the connected mechanisms, not just the AI
- Where does the AI need to be placed?

UX Team

- Think of a use case scenario that fits our target user: Catherine
- Build the user journey based on the targeted customer and anticipate the unique needs of medium-size nursery owners
  - Thinking about the emotions and thought process of the user
- Build the service blueprints based on user journey

Financial Team

- Thinking about the cost and the return of certain machinery
- Where can Plant Mom be used?
- Who would want to buy this application?
- What would people think of as a good trade off for using this kind of AI?

Use Case Scenario

Meet Catherine...

Case Description:

- She owns a medium greenhouse that she uses to grow vegetables and herbs for some local markets.

Problem:

- Catherine seems to have started seeing more wilting plants as the week passes.
- She doesn't know how to get her plants healthy again, because giving more water to her plants killed them.

Solution:

- With Plant Mom installed , Catherine’s plants are monitored, which is then able to see that the plants are being overwatered.
- Plant Mom will automatically take care of the plants through connected mechanisms like lowering the watering level.

Touch Points Map

Problem

User has a nursery that isn't gaining value over time

Search

Look through the app to see what plants can be added

Complete

View the results of plant's health status, making corresponding decisions

Application

Open up Plant Mom application and connect to the smart systems

Patience

After selecting the plant, wait for the analysis result

Service Blueprint

Evidence	The Plant Mom official website	Sensor kit and installation guides	Search Interface and Results Display	Notifications/alerts within the application	Plant health report and recommendations display
Customer Journey	Problem →	Application →	Search →	Patience →	Complete
LINE OF INTERACTION					
Frontstage Activities	Advertise the solution to the problem via targeted marketing, provide solution answers to potential customers	Ensure the Plant Mom application interface is user-friendly and intuitive	Provide a seamless search and selection functionality for the plant database	Display a loading or analysis animation during the waiting period	Present a clear and informative report on plant health, along with actionable solutions
LINE OF VISIBILITY					
Backstage Activities	Collect website visitor profile	Collect and process real-time data from sensors, use AI to analyze the data against the specific plant's requirements	Store user-specific data and history for better personalized recommendations	Continuously update the plant database and health parameters	Ensure servers and cloud functions are working efficiently for minimal wait times
LINE OF INTERNAL INTERACTION					
Support Processes	Address customer concerns based on customer analytics	Maintain a robust database of various plants and their specific needs	Regularly update the AI algorithms based on new research or feedback	IT support for application maintenance and server health	R&D for enhancing sensor accuracy and AI recommendations

How We Mitigate Risks for Users

Change Management

Tackle risks head-on with comprehensive onboarding, training resources, and an intuitive application design that maximizes ease of use

Erroneous Recommendations

Committed to transparency and to provide detailed logs of all AI activity, allowing for decisions to be reviewed and understood by users

Data Security and System Reliability

Built on a secure cloud infrastructure and a resilient architecture designed for rapid disaster recovery

03

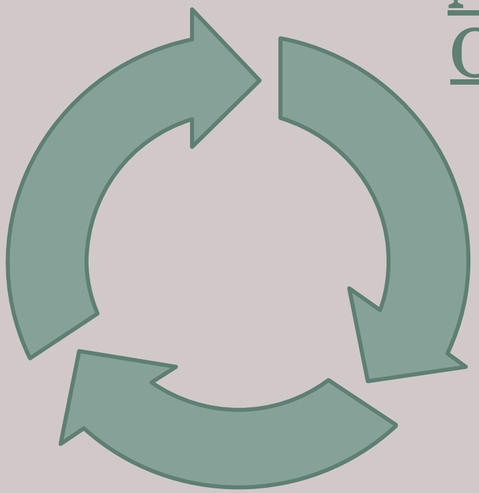
Financial Context

Value Flow Model

Plant Buyers

User Feedback:

As users engage more with PlantMom, they provide feedback, reviews, and suggestions.



Nursery Owners

Immediate Value:

Improved plant health and reduced plant mortality.

Long-Term Value:

Increased produce yield, reduced costs due to efficient resource utilization, and the joy of gardening with reduced hassle.

Application Producers

Continuous Improvement:

PlantMom uses this feedback for product enhancements, driving more value to users.

The Global Indoor Plants Market Size accounted for USD 16.2 Billion in 2022 and is estimated to achieve a market size of USD 30.4 Billion by 2032 growing at a CAGR of 6.6% from 2023 to 2032. (Resource: Indoor Plants Market)

Costs and Returns

Hardware Costs

Costs: Initial Instrumentation: $600 (includes sensors and other components).
Returns: One-time purchase cost from the user: $500 for the Plant Mom kit.

Subscription and Recurring Costs

Costs: Operational Costs (for the first year per user) = Approx. $50 per year.
Returns: Monthly subscription: $10 per month, totaling $120 annually.

Long-term and Secondary Revenues

Costs: R&D for product enhancements based on user feedback and technological advancements.
Returns: Long-Term Subscriptions, Affiliate Marketing etc.

Detailed Estimates for Instrumentation and Operations

Category	Sub Category	Description	Cost per unit or monthly ($)
Instrumentation Costs	Soil Moisture Sensors	Measures the moisture level in the soil, indicating when watering is needed.	20-40
	Temperature Sensors	Monitors the ambient temperature for optimal plant growth.	10-25
	Conductivity Sensors	Determines nutrient levels in the soil.	15-30
	pH Sensors	Measures the soil's acidity or alkalinity, crucial for certain plants.	15 - 40
	Smart Thermostat	Controls room temperature to create an ideal environment.	100 - 250
	Smart Motors and Humidifiers	Adjusts blinds for optimal sunlight and Controls air moisture to maintain the right humidity levels	80-250
	Smart watering system	Automated watering based on moisture sensor readings.	50-200

Category	Sub Category	Description	Cost per unit or monthly ($)
Operational Costs	Server Costs	Cloud data storage and processing for the application.	200-500/month
	Maintenance and Updates	Regular software updates, hardware maintenance, and customer support.	1000-3000/month
	R&D Costs	Continuous improvement, research, and development for expanding the product's capabilities.	1500-4000/month
	Licensing and Compliance	Any software licenses or compliance certifications required for the product	100-500/month

For price calculations, we will assume a modest user base of 1,000 users in the first year

04

Conclusion

Summary

- Idea making through AI-IoT perspective
  - 10 ideas per person
  - Narrowing ideas down into one main idea - Plant Mom
- Thinking about technical and financial feasibility of Plant Mom
  - Machinery: Plant Mom application, attached machinery used to automate, scan and recognition capabilities
  - Financial: Risks from providing machinery being too high
- User journey and showing a use case scenario with Catherine
  - See from Catherine's perspective, showing the product in a non-abstract way
  - Mitigating risks for users by taking precautions, like saving data in the cloud
- Internalizing feedback through critiques and updating the project

Group Reflection

- Our project journey was challenging. Understanding the nuanced needs of medium-sized nurseries required extensive research and empathy.
- Integrating complex technologies like AI and sensor networks into a user-friendly platform tested our technical capabilities. However, these challenges pushed us to think innovatively and refine our problem-solving skills.
- Understanding the capabilities of different sensors and the data they provide was an interesting learning experience. We recognized how advanced AI algorithms could take the sensor data and turn it into actionable insights for our targeted user group of medium-sized nurseries.
- Trying to think about the scope of the problem was quite challenging as well, but with help through critique, it was easier to grasp what we needed to focus on

Reflection - Evelyn

During this project, I noticed how there are a lot of precautions that need to be taken in order to create Plant Mom. For example, I noticed that thinking about what kind of machinery that Plant Mom connects to and where it is provided from (from Plant Mom or personal machinery) in order to analyze the risks.

Another thing that also stood out to me during making Plant Mom is how useful critique is. It was really nice to go through a lot of critique mini-sessions with other groups in order to get more ideas and perspectives that the six of us might have missed. Getting such feedback is really helpful to improve any kind of product, which is why I really liked having the giving and receiving format of critique for this project.

One thing that I would like to improve in the future is to be able to be more thorough with describing the product. We struggled a bit with deciding what the details of the product is, which made it difficult to build on the rest of the project, like the user journey and the risks. One way that we could improve this aspect would be to meet up on zoom more often to provide room to discuss more ideas.

Reflection - Ebi

During this project, I made a lot of mistakes. I first made the mistake of not taking the proper time to come up with clever ideas for the project. Because of this initial lack of effort, it became harder and harder for me to put in my best effort for the class. I also made the mistake of thinking that I understood IoT well enough that my technical requirements for the technology was never properly verbalised. Even now I don't think I did a great job in explaining the technical capabilities for the project, but again,I don't think this showcased my best work. Finally, I don't think the spirit of AI was a big enough part of my technical work. Though our team jumped at the UX and financial aspects of project, I think I failed to find the low hanging fruit of the different AI integrations for the final pitch.

Speaking of the final pitch, I do think that was a mess for my own personal experience. I know that I can be more fluid with my speech, and though I'm sure it wasn't obvious there was practice. I think this project showed me the dangers of giving up too early.

Reflection - Varsha

Consider the financial viability from the customer's perspective—this was the pivotal realization that emerged during our classroom critique when introducing our concept, "Plant Mom." Our initial target customer was identified as home plant owners, but Professor Nik posed a critical question: Would this demographic be willing to pay for the "Plant Mom" module? This query sparked a reevaluation of our approach.

In my network, a friend who owns a nursery caught wind of our concept, prompting discussions with Professor Nik and the team. Together, we delved into scrutinizing the target customer, refining our business model, and sizing up the indoor plant market. In light of our deliberations, we strategically pivoted to focus on nursery owners, a segment more inclined to invest in our solution compared to individual plant owners.

My second key takeaway centers on the importance of presenting a crystal-clear technical model in our pitch. We recognized that elucidating the specifics—such as the utilization of sensors, the integration of AI, and the nature of data collection—right from the outset is paramount. This not only provides the audience with a comprehensive understanding of our model but also addresses feedback garnered from our initial critique. Consequently, we fine-tuned and rectified these aspects in our final pitch, ensuring a more impactful and well-received presentation.

Reflection - Ashima

With this project, I'm struck by the dynamic interplay between innovation, practicality, and user-centric design. The project began with a vision to support plant lovers in nurturing their green companions, but as we progressed, it became clear that our ambitions had to be tempered with market realities. Initially, we envisioned a tool for the individual plant enthusiast, but feedback from our classroom critique, particularly a probing question from Professor Nik, prompted a strategic pivot. It wasn't just about what we thought was valuable, but what our customers would invest in. The critique also highlighted the necessity of presenting a product pitch that is both clear and succinct, one that effectively communicates the product's design / form factor it comes in and technical viability to the audience.

A dialogue with a potential user for our team revealed a new path and underscored the significance of aligning our product with the needs of a market segment that could truly benefit from—and afford—our solution.

This activity taught me two pivotal lessons: the power of targeted questions to steer a project to its true north, and the necessity of continuous iteration, grounded in user feedback. Both have deeply influenced my approach to product ideation, development, reminding me that successful innovation is not just about meeting needs but also about ensuring economic sense for both the maker and the user.

Reflection - Ikram

When we first discussed the technical capabilities of IoT sensors and how AI could leverage that data, it reminded me of the forest monitoring example from reading - Like how edge IoT leveraged to best. And during our mock pitch, the major feedback that we received was around the technical specificities of “PlantMom,” I realized the importance of providing specifics about the exact sensors, data sources, and AI techniques used rather than just stating what the device can do. For instance, instead of vaguely saying PlantMom will monitor soil moisture, I needed to explain that we plan to use a particular moisture sensor and train a model on the sensed data to recommend watering schedules. These technical details in our final pitch was very helpful for conveying PlantMom’s value proposition.

Designing through this process, exposed me to other applications of data-centered design, particularly how IoT generates data that AI can then leverage to provide value. I also noticed how the IoT-AI market is becoming available as models continue to improve and AI techniques become more accessible to developers. Regardless, I believe widespread adoption of more complex AI IoT systems, like optimizing traffic signals, could still be years away.

Reflection - Siyun

In reflecting on the recent project from a user experience (UX) perspective, two key insights emerged that shaped my understanding and approach to product development. One of the main lessons learned is the importance of considering how users interact with the product beyond their initial satisfaction. It's not just about whether they like the product but also about how they manage when it doesn't work or underperforms. This consideration brings to light the potential risks and how they can be addressed effectively. The more powerful and useful a product is, the more likely customers will depend on it, making any failure almost catastrophic for both the user and the business. For example, if the "Plant Mom" enables full automation of nursery management, the inaccurate sensor data would kill plants at a sizable scale and threaten the entire business. This situation presents a unique dilemma for the UX team: how to balance making the product useful and powerful, yet safe and reliable. The challenge lies in avoiding a product that is either overly safe and undesirable or overly useful but risky. Striking this balance is critical to ensure both the product's success and the business's sustainability.

My second key takeaway is the realization of the importance of collaboration with the technical and financial teams. Working on this project highlighted that the decision-making process in product development is a collective effort. The technical team's expertise in determining the feasibility of building the product and the financial team's insights into cost implications are invaluable. The role of the UX team, in this context, extends beyond simply advocating for the customer. It involves navigating and maximizing user benefits within the constraints and realities proposed by these teams. This cross-functional collaboration is essential for creating a product that is not only desirable from a user's standpoint but also feasible and viable from technical and financial perspectives.

Thank you!